

WHAT IS CLAIMED IS:

1. A cutter comprising:

a base for supporting a workpiece;

a holder supported on the base portion in an upright posture;

a cutter blade portion adapted for supporting a moving blade that cuts the workpiece, the cutter blade portion being supported on the holder so as to be movable between an upper position and a lower position, the cutter blade portion being closer to the base in the lower position than in the upper position; and

a laser generator for emitting laser light, the laser generator being attached to one of the holder and the cutter blade portion in an orientation to direct at least a portion of the laser light onto a position on the workpiece that is directly beneath the cutter blade portion with respect to the cutter blade portion in the upper position.

2. A cutter comprising:

a base for supporting a workpiece;

a cutter blade portion adapted for supporting a moving blade that cuts the workpiece;

a laser generator having a light emitting portion that irradiates laser light onto a position to be cut on the workpiece;

a laser generator support member supporting therein

Sub
N

the laser generator slidable in a horizontal direction; and
means for moving the light emitting portion of the
laser generator in the horizontal direction.

3. The cutter as claimed in claim 2, wherein the laser
generator has a first side and a second side opposite the
first side, and the moving means comprises:

a screw member screwingly fitted in the laser
generator support member with a tip of the screw member
abutting against the first side of the laser generator, and

a resilient member interposed between the laser
generator support member and the second side of the laser
generator for urging the laser generator toward the screw
member.

4. The cutter as claimed in claim 2, wherein the
moving means comprises:

a screw member extending in an extending direction
through a side of the laser generator support member and
into a side of the laser generator, the screw member being
freely rotatable with respect to the side of the laser
generator support and screwingly fit in the side of the
laser generator, and

a resilient member for urging the laser generator in a
direction away from the side of the laser generator support
member.

5. The cutter as claimed in claim 2, wherein the laser

Sub
A1

generator has a first side and a second side opposite the first side, and the moving means comprises:

5 a screw member extending in an extending direction through a side of the laser generator support member and into the first side of the laser generator, the screw member being rotatably supported by the side of the laser generator support member but immovable in the extending direction, and

10 a resilient member interposed between the laser generator support member and the second side of the laser generator for urging the laser generator toward the screw member.

6. The cutter as claimed in claim 2, wherein the laser generator has a first side and a second side opposite the first side, and the moving means comprises:

15 a screw member having one end threadingly engaged with the first side of the laser generator and another end provided with a gear wheel,

20 a knob member having one end provided with a pinion engaged with the gear wheel and another end provided with a knob and rotatably supported by a side of the laser generator support member; and

25 a resilient member interposed between the laser generator support member and the second side of the laser generator for urging the laser generator toward the screw member.

Sub
X1

093044-081604

7. The cutter as claimed in claim 2, wherein the laser generator has a first side and a second side opposite the first side, and the laser generator support member including an interior wall positioned in confrontation with the first side; and the moving means comprises:

a screw member having one end threadingly engaged with the first side of the laser generator, an intermediate portion rotatably supported by the interior wall, and another end provided with a gear wheel,

a knob member having one end provided with a pinion engaged with the gear wheel and another end provided with a knob rotatably supported by a side of the laser generator support member; and

a resilient member interposed between the interior wall and the first side of the laser generator for urging the laser generator away from the interior wall.

8. The cutter as claimed in claim 2, wherein the laser generator has a first side, a second side opposite the first side, and a third side perpendicular to the first and second sides and extending in a horizontal direction, and the moving means comprises:

a screw bar threadingly engaged with the laser generator support member and extending in parallel with the third side of the laser generator;

a ring like member fixed to the screw bar and movable

Sub
A
together with the screw bar, the ring like member being engaged with the third side of the laser generator; and

a resilient member interposed between the laser generator support member and the second side of the laser generator for urging the laser generator toward the first side.

9. The cutter as claimed in claim 2, wherein the laser generator has a first side, a second side opposite the first side, and a third side perpendicular to the first and second sides and extending in a horizontal direction, and the moving means comprises:

a screw bar fixed to the laser generator support member and extending in parallel with the third side of the laser generator,

a ring like member threadingly engaged with the screw bar and movable in an axial direction thereof, the ring like member being engaged with the third side of the laser generator; and

a resilient member interposed between the laser generator support member and the second side of the laser generator for urging the laser generator toward the first side.

10. The cutter as claimed in claim 2, further comprising a resilient body for urging the laser generator in a vertical direction.

Sub
A

11. The cutter as claimed in claim 2, further comprising a resilient body for urging the laser generator in frontward and rearward directions regarding laser beam emitting direction.

5 12. The cutter as claimed in claim 2, wherein the laser generator support member has a first side wall and a second side wall extending in a vertical direction, and further comprising a first stop member provided to the first side wall and movable in a horizontal direction and a second stop member provided to the second wall and movable in a horizontal direction for regulating a horizontal movement of the laser generator relative to the laser generator support member.

10 13. A cutter comprising:

15 a base for supporting a workpiece;

a cutter blade portion adapted for supporting a moving blade that cuts the workpiece;

20 a laser generator having a light emitting portion that irradiates laser light onto a position to be cut on the workpiece;

a laser generator support member formed with a housing space for housing the laser generator;

25 a pivot means enabling the laser generator to pivot horizontally and vertically with respect to the laser generator support member;

Sub A
a first regulation member screwingly fitted in the laser generator support member for pressing against the laser generator to pivot the laser generator horizontally about the pivot means;

5 a second regulation member screwingly fitted in the laser generator support member for pressing against the laser generator to pivot the laser generator vertically about the pivot means;

10 first resilient means for urging the laser generator toward the first regulation member, and

second resilient means for urging the laser generator toward the second regulation member.

14. The cutter as claimed in claim 13, wherein the pivot means includes:

15 a pivot fulcrum provided on a side of the laser generator; and

a pivot fulcrum bearing formed in the laser generator support member in confrontation with the pivot fulcrum.

20 15. The cutter as claimed in claim 14, wherein the pivot fulcrum and the pivot fulcrum bearing are formed in concave hemispherical shapes, and further comprising a ball disposed between and supported by the pivot fulcrum and the pivot fulcrum bearing.

25 16. The cutter as claimed in claim 14, wherein the pivot fulcrum is formed in a protruding arced shape, and the

Sub
A

pivot fulcrum bearing is formed in an indented complementary arced shape that matches the protruding arced shape of the pivot fulcrum.

5 17. The cutter as claimed in claim 14, wherein the pivot fulcrum is formed in a protruding angular shape having a top apex portion, and the pivot fulcrum bearing is formed in an indented angular shape that receives the apex of the protruding angular shape of the pivot fulcrum.

18. A cutter comprising:

10 a base portion for supporting a workpiece;

a cutter blade portion adapted for supporting a moving blade that cuts the workpiece;

15 a laser generator for emitting laser light to irradiate, with the laser light, a position to be cut on the workpiece;

a convex lens provided in the laser generator for adjusting a focal point of the laser light emitted by the laser generator; and

20 a lens moving unit for moving the convex lens parallel with an optical axis of the laser light emitted from the laser generator to change a width of the laser light.

25 19. The cutter as claimed in claim 18, further comprising a cylindrical lens disposed in front of the laser generator with respect to direction of laser emission, for aligning the laser light into parallel rays.

Sub
A1

20. The cutter as claimed in claim 18, wherein the lens moving unit comprises a lever attached to the convex lens for moving the convex lens in association with movement of the lever into different positions following the optical axis of the laser light; and

a scale provided adjacent to the lever, and having marks that indicate width of laser light corresponding to different positions of the lever.

21. A cutter comprising:

a base portion for supporting a workpiece;

a cutter blade portion adapted for supporting a moving blade that cuts the workpiece;

a laser generator for emitting laser light to irradiate with the laser light a position to be cut on the workpiece, the laser generator having a light emitting portion from which the laser light is emitted, and a stationary wall positioned in front of the light emitting portion;

a movable member disposed in confrontation with the stationary wall and movable toward and away from the stationary wall for changing a width of the laser light.

22. The cutter as claimed in claim 21, further comprising a scale with marks that indicate the width of laser light corresponding to a movement position of the movable member.

Sub
23. A cutter comprising:

a base portion for supporting a workpiece;

a holder supported on the base portion in an upright posture;

5 a cutter blade portion adapted for supporting a moving blade, the cutter blade portion being provided on an upper portion of the holder and adapted for free vertical movement toward and away from the base portion between an uppermost position to a lowermost position, the moving blade cutting
10 through the workpiece when the cutter blade portion is moved from the uppermost position to the lowermost position;

a laser generator provided on the holder and for
15 emitting laser light through a laser emitting portion to irradiate, with the laser light, a position to be cut on the workpiece;

20 a cleaning mechanism for contacting the light emitting portion of the laser generator in interlocking relation with the vertical movement of the cutter blade portion from the uppermost position to the lowermost position, the cleaning mechanism cleaning off the light emitting portion by said contact.

24. The cutter as claimed in claim 23, wherein the cleaning mechanism includes a brush protruding toward the laser generator.

25 25. A cutter comprising:

Sub
A1

a base for supporting a workpiece;
a holder supported on the base portion in an upright posture, the holder having a slide shaft support portion;

at least one slide shaft extending through the slide shaft support portion and slidably movable in a frontward and a rearward direction with respect to the slide shaft support portion, the at least one slide shaft having a front end;

a hinge holder fixed to the front end of the at least one slide shaft, the hinge holder having a front side;

a cutter blade portion adapted for supporting a moving blade that cuts the workpiece, the cutter blade portion being supported on the hinge holder so as to be movable between an upper position and a lower position, the cutter blade portion being closer to the base in the lower position than in the upper position; and

a laser generator for emitting laser light, the laser generator being attached to the front side of the hinge holder in an orientation to direct at least a portion of the laser light onto a position on the workpiece that is directly beneath the cutter blade portion with respect to the cutter blade portion in the upper position.

26. The cutter as claimed in claim 25, wherein the at least one slide shaft is rotatable about its axis within the slide shaft support portion; and

Sub
A

the cutter further comprising means for adjustably fixing an angular rotational position of the at least one slide shaft to thereby controlling inclination of the cutter blade portion.

5 27. The cutter as claimed in claim 25, wherein the cutter blade portion comprises a saw cover pivotally supported to the hinge holder, and

10 the cutter further comprising a dust cover attached to the saw cover and positioned in alignment with and in front of the laser generator when the cutter blade portion is moving to the lower position.

28. The cutter as claimed in claim 25, wherein the holder is pivotable with respect to the base, and

15 the cutter further comprising means for adjustably fixing a pivot position of the holder to thereby fixing inclination of the cutter blade portion.

29. The cutter as claimed in claim 28, wherein the at least one slide shaft is rotatable about its axis within the slide shaft support portion; and

20 the cutter further comprising means for adjustably fixing an angular rotational position of the at least one slide shaft to thereby controlling inclination of the cutter blade portion.

25 30. The cutter as claimed in claim 25, wherein the laser generator has a light emitting portion that irradiates

Sub
A
laser light onto a position to be cut on the workpiece; and
the cutter further comprising:

a laser generator support member fixed to the front
side of the hinge holder for supporting therein the laser
5 generator slidable in a horizontal direction; and

means for moving the light emitting portion of the
laser generator in the horizontal direction.

31. The cutter as claimed in claim 25, wherein the
laser generator has a light emitting portion that irradiates
10 laser light onto a position to be cut on the workpiece; and

the cutter further comprising:

a laser generator support member fixed to the front
side of the hinge holder and formed with a housing space for
housing the laser generator;

15 a pivot means enabling the laser generator to pivot
horizontally and vertically with respect to the laser
generator support member;

a first regulation member screwingly fitted in the
laser generator support member for pressing against the
20 laser generator to pivot the laser generator horizontally
about the pivot means;

a second regulation member screwingly fitted in the
laser generator support member for pressing against the
laser generator to pivot the laser generator vertically
25 about the pivot means;

Sub
A1

first resilient means for urging the laser generator toward the first regulation member, and

second resilient means for urging the laser generator toward the second regulation member.

5 32. The cutter as claimed in claim 25, further comprising:

10 a laser generator support member fixed to the front side of the hinge holder, the laser generator emitting laser light to irradiate, with the laser light, a position to be cut on the workpiece, the laser generator having a light emitting portion from which the laser light is emitted, and a stationary wall positioned in front of the light emitting portion; and

15 a movable member disposed in confrontation with the stationary wall and movable toward and away from the stationary wall for changing a width of the laser light.